

REMARKS

Claims 1 and 3-37 are pending in this application. Claims 1, 3 and 26 have been amended. Claims 26-37 remain withdrawn from consideration by the Examiner as being directed to a non-elected invention. Reconsideration of this application, as amended, is respectfully requested.

Interview with Examiner

An interview was conducted with the Examiner and the Examiner's supervisor on October 29, 2009. Applicants greatly appreciate the courtesy shown by the Examiners during the interview.

In the interview with the Examiners, it was proposed to amend claim 1 to recite "varying a volume of a droplet of the viscous medium independent of a stroke length of the impacting mechanism." The Examiners agreed that this recitation appeared to overcome the rejections of record; however, further search and consideration would be necessary before patentability of claim 1 could be indicated.

As the Examiner will note, claim 1 has been amended in the manner proposed during the interview. Therefore, it is believed that the Examiner's rejections are no longer appropriate. Applicants will present further arguments below with regard to the Examiner's specific rejections.

Election/Restriction

Claims 26-37 remain withdrawn from consideration as being directed to a non-elected invention. In the Examiner's Office Action, the Examiner asserts that claims 1 and 26 lack the same or corresponding special technical feature. As the Examiner will note, claim 26 has been amended to recite the special technical feature that the volume is varied independent of the stroke length of the impacting mechanism, which is believed to define the present invention over

the prior art. Therefore, it is requested that claims 26-37 be rejoined in this application and passed to issue along with the elected method claims 1 and 3-25.

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 3 and 11 stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. This rejection is respectfully traversed.

As the Examiner will note, claim 3 has been amended to address the Examiner's rejection by providing antecedent basis for the recitation "predetermined range."

With regard to claim 11, Applicants disagree with the Examiner that this claim is indefinite. Although claim 11 may be broad with regard to the recitation "reduced to a preset degree," Applicants believe that the metes and bounds of this recitation can be determined.

In view of the above amendments and remarks, Applicants respectfully submit that claims 3 and 11 are definite and clear. Reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. § 112, second paragraph, are therefore respectfully requested.

Rejections Under 35 U.S.C. §§ 102 and 103

Claims 1, 3-7, 9, 10, 12, 14, 19-21 and 23 stand rejected under 35 U.S.C. § 102(b) as being anticipated by La et al., U.S. Patent No. 5,320,250. Claims 8, 11, 13 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over La et al. Claims 15-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over La et al. in view of Tzeng et al., U.S. Patent No. 5,988,526. Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over La et al. in view of Berg et al., U.S. Patent No. 6,450,416. Claim 24-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over La et al. in view of LaBudde et al., U.S. Patent No. 6,589,791. Claims 1, 3, 4, 11, 14, 19, 21 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maruyama, U.S. Application Publication No. 2002/0025260 in view of La et al. Claims 15-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maruyama

in view of La et al, and further in view of Tzeng. Claims 23-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maruyama in view of La et al, and further in view of LaBudde et al. These rejections are respectfully traversed.

The present invention is directed to a method of jetting droplets of viscous medium onto a substrate. Independent claim 1 recites a combination of steps including “varying a volume of a droplet of the viscous medium independent of a stroke length of the impact mechanism.” Applicants respectfully submit that La et al. fails to teach or suggest the present invention as recited in independent claim 1.

In La et al., the amount of viscous medium ejected is dependent on the depth of the hammer impact (see column 5, lines 36-42) and the depth of the hammer impact is, in the embodiment shown in Figures 1-5, controlled by varying the position of a stop screw 64. In view of this, the La et al. reference does not vary the volume of a droplet “independent of a stroke length of the impact mechanism” as recited in claim 1 of the present invention. It is necessary to stop the machine and adjust the screw to change the volume of a particular droplet. A similar arrangement is shown for the embodiment shown in Figures 6-10, where the impact of the hammer 104 is controlled by a stroke adjustment micrometer screw assembly 124.

With regard to the Maruyama reference, this reference also varies the stroke of the impact mechanism in order to vary the volume of a droplet. Specifically, as recognized by the Examiner in the Office Action dated July 27, 2009, at page 11, second paragraph, “[t]he amount of fluid discharged is varied by controlling the stroke length of the piston [0148]. In view of this, Maruyama fails to disclose “varying a volume of a droplet of the viscous medium independent of a stroke length of the impact mechanism” as recited in claim 1 of the present invention.

In the present invention; however, the amount of viscous medium to be ejected is dependent on the amount of viscous medium fed into the nozzle space, and is independent of a stroke length of the impact mechanism. In other words, according to the present invention, the filling degree of the nozzle space is varied to adjust the volume of viscous medium in the nozzle space and thereby control the specific volume of each individual droplet that is ejected. This can

be clearly understood from a review of Figures 6a-6c of the present application, where the volume of viscous medium in the nozzle space is controlled in order to adjust the specific volume of each individual droplet. Since La et al. and Maruyama fail to disclose the step of "varying a volume of a droplet of the viscous medium independent of a stroke length of the impact mechanism," these references fail to anticipate, or render obvious, independent claim 1 of the present invention.

With regard to the Tzeng et al., Berg et al. and LaBudde references relied on by the Examiner, these references have been relied to support various aspects of the dependent claims. While not commenting at this time with regard to the appropriateness of the Examiner's rejections, it is noted that none of these references disclose varying the volume of a droplet independent of a stroke length of an impact mechanism. Therefore, these references fail to make up for the deficiencies of La et al. and Maruyama.

With regard to dependent claims 3-25, Applicants respectfully submit that these claims are allowable due to their dependence on independent claim 1, as well as due to the additional recitations in these claims.

In view of the above amendments and remarks, Applicants respectfully submit that claims 1-25 clearly define the present invention over the references relied on by the Examiner. Reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. §§ 102 and 103 are respectfully requested.

CONCLUSION

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Paul C. Lewis, Registration No. 43368 at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

By 

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